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DEPARTMENT OF NURSING EDUCATION

IN CHARGE OF

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AN EXPERIMENT IN THE PROJECT METHOD OF TEACHING

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Difficulties Arising in the Old Methods of Teaching.—The methods of teaching commonly used in the training school are the lecture, the recitation, and the quiz. Many of us have found that these methods are not entirely satisfactory. Among the difficulties encountered are:

(1) A lack of interest. By interest I do not mean a passing excitation or activity, but a genuine interest that is marked by the absorption of powers, an interest that will result in the student engaging herself in a wholehearted way. A student may do fairly good work without being actuated with this real live interest but, as Mr. Dewey tells us, it is absurd to suppose that a student gets more intellectual or mental discipline when he goes at a matter unwillingly or indifferently, than when he goes at it out of the fullness of his heart.

(2) There is a want of correlation—a failure to make adequate connection between classroom work and the actual problems that involve and justify that classroom program. The student may learn many things in the classroom and know them in such a way that she could answer examination questions, but she has not learned them in such a manner as to have them available for practical use when the hour of need should arise. She remains almost helpless in the face of practical situations. Much of the classroom theory is pigeonholed, and remains so, because it has not been related to the student's actual problems. This is especially true in such subjects as Anatomy and Physiology, Chemistry, and Bacteriology.

(3) Books are not used to best advantage. There is an overemphasis on the textbook and not sufficient attention given to the *use* of textbooks and other material. Books are our servants, not our masters. They should be read to derive the facts and ideas which are essential in the solution of problems, and not to find out everything that an author has to say. The sources from which data can be gathered, regardless of the subject under consideration, are almost without number, but they are not utilized in the best possible manner.

In the past we have aimed only to equip our students with a body of knowledge in order that they may sometime find use for this body of information in their work and in later life. Instead, we should emphasize the control and direction of mental activity toward some end, that is, the solution of the problems that they meet. It is this purposive activity that we desire, and not mere drifting.

The Project Method. What Is It?—The project method is the utilization of the purposeful act in the educative process. It is an attempt to present subject matter in response to the need which students feel for the material to be presented. It is a psychological method of introducing subject matter. In the teaching of Chemistry, for example, it may seem logical to teach the subject "chlorine" by calling attention to the history of the gas, its occurrence, properties, method of preparation, uses, compounds, etc., but to the student nurse, the problems which will probably be more logical and more satisfying to her desire for investigation, will deal with the actual practical value of chlorine in her field of work. For instance, what is it that makes Dakin's solution valuable in the treatment of wounds? or, how can chlorinated lime be used as a disinfectant? If a student is directed in the careful analysis of such a problem, the information regarding chlorine, as outlined above, will be mastered and will be remembered because such information is associated with the solution of interesting and practical problems. In the project method, then, we must get the student's point of view, discover her problems, and organize the material to be presented with reference to these problems.

Dr. William Heard Kilpatrick, in a paper on the project method, gives us the following in regard to classification of the different types of projects: Type 1, where the purpose is to embody some idea or plan in external form, as building a boat, writing a letter, presenting a play; type 2, where the purpose is to enjoy some (esthetic) experience, as listening to a story, hearing a symphony, appreciating a picture; type 3, where the purpose is to straighten out some intellectual difficulty, to solve some problem, as to find out whether or not dew falls, to ascertain how New York outgrew Philadelphia; type 4, where the purpose is to obtain some item or degree of skill or knowledge, as learning to write grade 14 on the Thorndike Scale, learning the irregular verbs in French. It is at once evident that these groupings more or less overlap and that one type may be used as means to another end. It may be of interest to note that with these definitions the project method logically includes the problem method as a special case. It seems to me that this classification of projects should convince us at once that the method is applicable to any subject.

An Experiment in the Teaching of Anatomy and Physiology by the Project Method.—The school in which I tried out this experiment was connected with a hospital for children. At once you can see that this limited the number and variety of problems that might have been used in the course. Twelve bright, enthusiastic young women made up the class. Small as the class was, the students fell into two distinct groups, one much better prepared than the other and consequently able to do better work. The material to be covered was the first half of the course in Anatomy and Physiology, in fifteen lessons of one hour and one-quarter each.

I began the experiment with the study of bones. The first part of the hour was devoted to the raising of the problem. This was done in two steps.

First Step.—The students were made to realize the importance of the knowledge of bones. The following points were brought up in the discussion: (1) The great number of bone diseases makes it desirable to establish special orthopedic hospitals; (2) In most general hospitals, orthopedics forms a special department; (3) All nurses are called upon to do some orthopedic nursing; (4) Many nurses make this branch of nursing a specialty; (5) Many orthopedic cases are difficult to care for; much skill is required; (6) Recent progress and development as result of the war, calls for still more intelligent nursing; (7) Many medical and surgical cases involve bones—rickets, sinusitis, Kraska, etc.; (8) A knowledge of bones is necessary in order to properly instruct patients, and mothers caring for sick children; (9) The knowledge is necessary in order to understand doctors' orders and conditions described in books, magazines, etc. There was nothing in the above points that the students did not already know, but the aim was to bring out all these facts in order to impress them with the importance of the knowledge of bones.

Second Step.—The students were brought to recognize their lack of this knowledge. They were asked to name several bone diseases. Then we selected one disease,—rickets, the one with which they were most familiar,—to show the need for more knowledge about bones. These are some of the questions that were put to them: Why is rickets common among children? Why do the child's legs become bowed? Why is the child pot-bellied? Why the peculiar shape of the head? What treatment are you giving and why? Similar questions were asked about fractures. Of course, the students were not able to answer many of these questions, even though the conditions were quite familiar to them. The object of these questions was to make the students feel their lack of necessary knowledge, and also to give them some idea of what knowledge they ought to have.

After a short discussion the students were asked to reflect a moment on the matter, then to write out a statement of the problem that they thought we had before us in this course of Anatomy and Physiology. The answers were collected and the following was agreed upon: "The problem we have before us in this course is to learn the name, composition, and function of the different bones of the body in order that we may have the fundamental knowledge necessary to do intelligent nursing; to teach simple lessons in relation to bones; and appreciate literature involving the subject." We then took up the composition of bone. Four lessons followed this introductory one, and at the beginning of each lesson, one of the students was asked to state the problem. Each week two or three of the students were asked to report on conditions they had found in the wards which related to the problem, and on the applications they had made.

After we had completed the study of bones, I checked up the results and found that I had made at least two mistakes. First, the problem was too big, too general, it had no beginning and no end. It should be something concrete, and so specific that there would be no question of its boundaries; it should be one that can be easily kept in mind. The work on bones is usually anticipated, that is, it is given before the students have met many of the problems around which the subject matter can be grouped, so in that case a different kind of project must be used. A project of the fourth type that is most fascinating, and which results in a thorough knowledge of bones, is the modelling of a miniature skeleton from clay. Each bone is formed separately and later they are joined together to make the skeleton. The bones of the human body are used as models. While the student is modelling the different bones, she keeps her book before her and learns the names of the bones and their parts as she works on them. The bones of the head could be learned by making them the subject for a contest, for the separate bones could not very easily be modelled. This method of approach makes this usually uninteresting subject of bones most fascinating. The student learns to use her hands, and it may open to her a new avenue of activity.

If the student is familiar with the disease of rickets, the following problem might be used: "What is the bone condition in rickets that calls for the treatment you are giving?" In the analysis of this problem the student will learn the composition and microscopic structure of bone as well as the process of regeneration.

A second mistake that I made was in placing emphasis on the textbook rather than on the problem to be solved. If some one had asked those students at any time during this work what was their lesson in Anatomy and Physiology, they probably would have said, "Pages 60 to 89 in Kimber and Gray," and not that they had a problem to solve. After a suitable problem has been formulated, all emphasis should be put on the solution of that problem and the book should be used as a means to that end. Despite those mistakes we had gained something. The interest of the students was aroused and we began to think in terms of problems, actual situations in the wards.

In the beginning it is very difficult to get the students to bring their problems to the class room, they seem to live in blissful ignorance of many of the problems that surround them, but with adroit maneuvering on the part of the teacher the students can be directed in their investigations. For instance, in one of the lessons the subject of rickets was used in the development of the problem. The students did not feel that this was a problem for them. They had taken care of many cases and they knew the symptoms, the treatment, and the nursing care. It was not until I had asked several questions which they could not answer that they realized that this was actually a problem. I think that familiarity with objects and situations is often mistaken for knowledge, so in the beginning the teacher will frequently need to guide the students in the direction of the problem and even anticipate it sometimes. Toward the end of the semester, when the students were more familiar with the method, it was no longer necessary for me to direct them in the selection of their problems, for the solution of one problem brought on several others that could be used to advantage. The following project will illustrate this point.

Only five periods remained in which to cover the chapter on Foods and two on the Digestive System. I had learned by this time that the greater the number of projects one used to cover a certain amount of theory, the longer would be the time required, and on the other hand, if the project covered a large amount of theory, there was much time saved. I was anxious, then, to get a project that was not only clear and specific, but one that would cover that material. The following was the project chosen: *Plan a well balanced meal for an adult doing moderate exercise, and trace the activities of the digestive system and the changes that take place in the food, from the time that the meal is ingested until the waste is given off in the feces.* The outline of the general introduction was as follows:

A. Importance of knowledge of digestion in dealing with 1. Healthy individuals, for (a) Prevention of gastric disorders, constipation, etc.; (b) Intelligent planning of diet; (c) Giving advice regarding the subject. 2. Diseased individuals, for (a) Adjustment of diet is necessary in all diseases and the responsibility usually falls to the nurse; (b) Special dietetic treatment required in many diseases such as rickets, scurvy, diabetes, kidney diseases, stomach and intestinal disorders, tuberculosis, etc.

B. Pupils' recognition of need.

Here again this was accomplished by questions that not only convinced the students that they needed this knowledge, but also gave them some idea of what knowledge was necessary.

Specific problems were then taken up and the one given above was chosen for the class project. A word of explanation regarding the problem might not be amiss. The first portion—*Plan a well balanced meal for an adult doing moderate exercise*—would cover much of the work on foods as given in Gray's Anatomy and Physiology. The student would need to know the classification of food, the food principles, their caloric value, the amount of food necessary for normal nutrition for a given individual, and the method of calculating the value of common articles of food. The second portion of the problem —*follow the activities of the digestive system * * * from the time that the food is ingested until the waste is given off in the feces*— would cover the work as given in the chapter on the digestive system, for the student would need to know the structure of every part of the digestive apparatus, as well as its mechanical action. The third portion—*the changes that take place in the food*—would require a knowledge of the chemical as well as the physical action that takes place, the time of such action, and the steps in the hydrolysis of complex molecules of proteins, fats and carbohydrates, to simpler molecules. In other words, it completes the work on foods as given in Chapter XV of the text.

The students agreed to work out the first portion of the project—*Plan a well balanced meal for an adult doing moderate exercise*—for the following week. No text book assignment was made, but it was interesting to find that the students not only used their text books and reference books in Anatomy and Physiology, but their books in dietetics as well. That is what I mean by saying that the books should be used as a means to an end, not as an end in themselves. The following week each student presented her plan to the class and gave a detailed explanation of the manner in which she worked it out. In doing this, and in answering the questions and the criticisms of her classmates, she incidentally made a complete recitation on the subject of foods. That recitation was not merely a rehearsing of facts, but an intelligent presentation of the solution of a practical problem. The students chose for the work of the next week the activity of the mouth and stomach in digestion and the resulting changes in the food. The entire project was completed in five lessons.

The students were then asked to think of some way of presenting the whole project worked out. Several methods were suggested, but the graphic method was the one selected by the majority of the students. In this method the activity of each part of the digestive system was represented by a graph. This graph showed the degree of activity taking place, the time of such activity, and the end products. These graphs were arranged in order; the first one representing activity in the mouth and the last the activity of the large intestine. This gave the student a complete picture of the entire process of digestion.

On completion of this work on food and digestion, we had one drill lesson. The questions that had been asked in the beginning of the work on digestion to make the students realize their need for this knowledge, were asked again. Now the students were able to answer them and felt great satisfaction in doing so. They then brought up such questions as these: "Why do some people who eat very little become fleshy, while others who eat a great deal are always thin?" and "Why is albumin in the urine a bad sign?" The first question would have been an excellent problem on which to hinge the work of metabolism, and the second one for the study of the kidney. There was no longer any difficulty in getting expression from the students, and they felt, too, that they would know how to go about any problem that might come up for solution.

Conclusion from Foregoing Experiment:

1. The project method is really called for in our work and is far superior to the older methods of teaching.
2. The problems should be the students' problems and they should be simple, brief and concise.
3. The greater the number of problems for a given amount of theory, the longer will be the time required to cover that theory.
4. In the beginning the students will need to be directed to their problems, but as they become familiar with the method this will not be necessary.
5. The method insures greater interest and a better correlation of theory and practice.
6. The text books are used as a means to an end and not as an end in themselves, and the students will not limit their work to one book, but will use every source of information available. They learn where to go and what material to use in the solution of their problems. They learn how to study, for when they are working toward the accomplishment of some definite result they keep to the main issue, they become critical of the contributions offered by their companions, they reason clearly for themselves, and they use their energies to best advantage.
7. Drill lessons will be necessary occasionally. The laboratory method will be included in the project method.
8. When several problems can be made to cover the same material, it is well to have the class working in small groups, each group taking a different problem. For example, in the study of the kidney

one group might take such a problem as this—"Why is albumin in the urine a bad sign?" Another group might choose—"Why is it that in some kidney diseases the patient is given a great deal of water, while in others, no water is given?" Still another problem might be—"Trace the excretion of waste through the kidney." There are always some students in the class who like to draw and make diagrams. A good project for them would be to make a large diagram of the kidney showing microscopical structure. The students could be given a week to work out their problems and at the end of that time they would present them to the class. This would be an added incentive for them to do the work well. In each of the problems mentioned above, the structure and function of the kidney would be learned, but a drill lesson might be advisable to make sure of gathering up any loose ends.

9. The method makes the work elastic. It gives the bright, ambitious students enough to do, for they can work the problems out in great detail. It is more easily grasped by the less capable students because the close correlation of theory to concrete cases makes it easily understood and remembered.

THE MISSISSIPPI VALLEY CONFERENCE ON TUBERCULOSIS

The Mississippi Valley Conference on Tuberculosis was held in Daluth, Minnesota, September 2 and 3. There were 325 delegates from out of town, including about fifty nurses from six states. Anna Drake, State Supervising Nurse for Iowa, was chairman of the Nursing Section, in which several short and interesting addresses were made. The special topic for the nurses' luncheon was "Recruiting of Nurses," where the suggestion was made that it is better to send a laywoman who is an interested, able speaker, than a nurse who might leave a poor impression behind her, no matter how excellent her nursing career had been. The State Association of Iowa won the silver cup offered for the largest number of Health Crusaders completing the final tournament, which indicates that the fifteen weeks' training has been concluded. The St. Louis County Sanitarium at Nopeming, Minnesota, displayed an exhibit of patients' work that brought forth a great deal of deserved praise, for the articles were excellently made and covered a fairly wide range.

The following resolution was adopted by the Nurses' Section:

"Whereas, nurses' training schools in past years have given comparatively little training in tuberculosis, and

"Whereas, tuberculosis is the greatest preventable disease problem of modern times, and

"Whereas, nurses entering the profession, do so out of a desire to be of the most service to humankind, therefore be it

"Resolved that the Mississippi Valley Conference on tuberculosis hereby urges all accredited training schools for nurses to provide, if possible, for all student nurses to spend a number of weeks of their training course in a well conducted tuberculosis sanatorium or, if that be for any reason impracticable, that a special course in tuberculosis be given all student nurses.

"Be it further resolved that we call to the attention of all young women who wish to render special service to mankind, that the nursing profession offers unparallelled opportunity to those who wish to relieve the suffering, comfort the afflicted and through tactful leadership to improve the health and increase the happiness of entire communities, and that emphasis be placed on the fact that the traditional fear of contagion in nursing tuberculosis patients is unwarranted and not supported by the facts of experience covering many years."

A similar resolution was adopted by physicians and will be forwarded to different medical schools throughout the country, asking that future medical students be given practical experience in the treatment of tuberculous patients.